Report [15]

HYDRO-ELECTRIC INQUIRY COMMISSION

REPORT
ON
MUSKOKA SYSTEM

W. D. GREGORY, CHAIRMAN
M. J. HANEY
LLOYD HARRIS
J. ALLAN ROSS
R. A. ROSS
COMMISSIONERS
JOSEPH H. W. BOWER
SERETARY

COPY

M U S K O K A S Y S T E M

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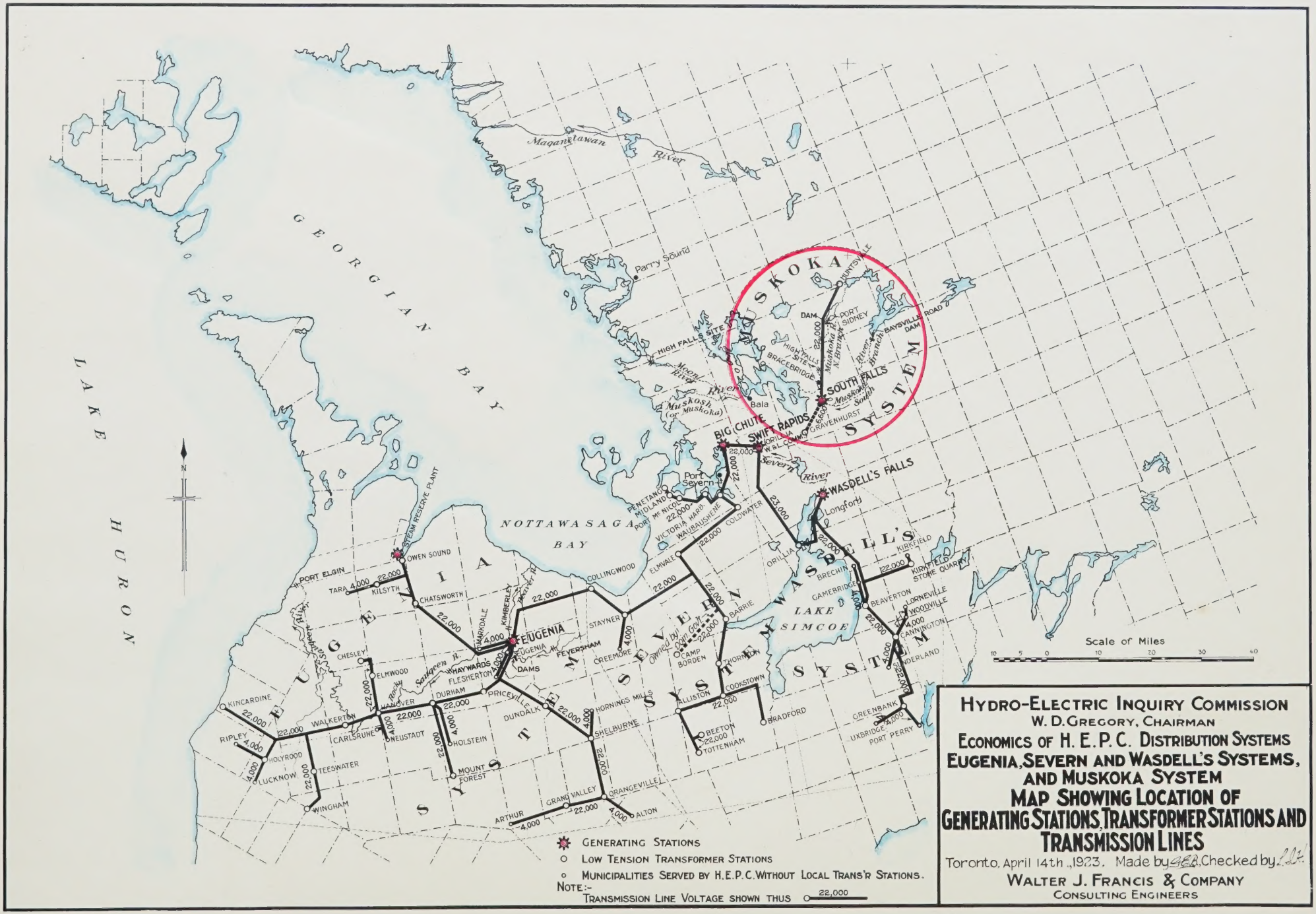
KUSKOKA SYSTEM


HYDRO-ELECTRIC INQUIRY COMMISSION
W. D. GREGORY, CHAIRMAN
ECONOMICS OF H. E. P. C. DISTRIBUTION SYSTEMS
EUGENIA, SEVERN AND WASDELL'S SYSTEMS, AND MUSKOKA SYSTEM
MAP SHOWING LOCATION OF GENERATING STATIONS, TRANSFORMER STATIONS AND TRANSMISSION LINES
Toronto, April 14th, 1923. Made by Checked by
WALTER J. FRANCIS & COMPANY
CONSULTING ENGINEERS
GENERATING STATIONS
LOW TENSION TRANSFORMER STATIONS
MUNICIPALITIES SERVED BY H.E.P.C. WITHOUT LOCAL TRANS'R STATIONS.
NOTE:-
TRANSMISSION LINE VOLTAGE SHOWN THUS 22,000
Scale of Miles
10 5 0 10 20 30 40
GEORGIAN BAY
LAKE HURON
NOTTAWASAGA BAY
LAKE SIMCOE
Maganetawan River
Parry Sound
MUSKOKA
SYSTEM
HUNTSVILLE
DAM
PORT SIDNEY
BAYSVILLE ROAD
DAM
HIGH FALLS SITE
BRACEBRIDGE
Muskoka R.
N. Branch
River
Branch
South
SOUTH FALLS
Bala
GRAVENHURST
Moon River
Muskosh (or Muskoka)
BIG CHUTE
SWIFT RAPIDS
ORILLIA
W. & L.
COMMOCKA
Severn River
WASDELL'S FALLS
Longford
Port Severn
PENETANG
MIDLAND
PORT McNICOL
VICTORIA HARB.
WAUBAUSHENE
COLDWATER
ORILLIA
WASDELL'S
SYSTEM
KIRKFIELD
KIRKFIELD STONE QUARRY
BRECHIN
GAMERIDGE
BEAVERTON
CORNEVILLE
WOODVILLE
CANNINGTON
SUNDERLAND
GREENBANK
UXBRIDGE
PORT PERRY
ELMVALE
BARRIE
CAMP BORDEN
THORNTON
COOKSTOWN
ALLISTON
BEETON
TOTTENHAM
BRADFORD
COLLINGWOOD
STAYNER
CREEMORE
Owned by Dom. Gov't
HORNINGS MILLS
SHELBURNE
ORANGEVILLE
ALTON
GRAND VALLEY
ARTHUR
EUGENIA
SYSTEM
STEAM RESERVE PLANT
OWEN SOUND
PORT ELGIN
TARA
KILSYTH
CHATSWORTH
MARKDALE
KIMBERLEY
EUGENIA
FEVERSHAM
DAMS
HAYWARDS
FLESHERTON
PRICEVILLE
DUNDALK
Saugeen R.
Rocky R.
CHESLEY
ELMWOOD
HANOVER
DURHAM
HOLSTEIN
MOUNT FOREST
KINCARDINE
RIPLEY
HOLYROOD
LUCKNOW
WALKERTON
CARLSRUHE
NEUSTADT
TEESWATER
WINGHAM
22,000
4,000

Map Showing location of the Eugenia, Severn, Wasdell's and Muskoka Systems

The area outlined in red shows the Muskoka System.

To His Honour Henry Cockshutt,

Lieutenant-Governor of the Province of Ontario.

May it Please Your Honour:-

The undertaking of the Hydro-Electric Power Commission of Ontario (hereinafter referred to as "the Commission") known as the "Muskoka System", has been inquired into in pursuance of the directions contained in Your Honour's commission to us, and the results of our investigations thereof are embodied in the following report. Full details of the engineering features and of the accounts of the System are to be found in the reports respectively of our Consulting Engineer, Mr. Walter J. Francis, and of our Accountants, Messrs. Price, Waterhouse & Company, which are transmitted to Your Honour herewith.

District served by the System

Mr. Francis has prepared a map showing the location of the generating plants, transformer stations and transmission lines of the Nugenia, Severn, Wasdell's and Muskoka Systems. On the copy of the map prefacing this report is outlined in red a part of the District of Muskoka known as the "Muskoka System." No rural lines have been constructed in the district and the only municipalities therein at present supplied with electrical energy by the Commission are the towns of Huntsville and Gravenhurst, the former being about thirty miles north of the latter. Parts of the Districts of Parry Sound and Haliburton

To the Queen's Bench Division.

Statement-Claimant of the Province of Ontario.

May it please Your Honour:-

The undersigned, of the Hydro-Electric Power Commission of Ontario (hereinafter referred to as "the Commission") being the "Ontario System", has been instructed into to prepare of the alleged violations in this Court's decisions to me, and the results of our investigations thereof are contained in the following report. Full details of the regulations involved and of the resources of the system are to be found in the reports respectively of [illegible] Engineer, Mr. Talbot W. Tuckis, and of our Investigator, Messrs. Irine, Sir-Moore & Company, which are transmitted to Your Honour herewith.

District Heard by the Public

Mr. Tuckis has prepared a map showing the location of the generating plants, transformer stations and transmission lines of the Company, namely, Niagara and Ontario Power. In the map of the map indicating this report is attached to and a part of the interim or report which the Commission [illegible] of final steps have been undertaken in the District and the only municipalities therein or primary supplies with electricity ready by the Commission are the Town of Tonawanda and Owensboro, the latter being about twelve miles north of the latter. Data of the distances of both towns and municipalities

might be added to the System if necessary.

Historical Sketch

On September 13th, 1909, the Commission reported to the town of Huntsville the results of an investigation into power conditions in the district, having in view the supply of electrical energy to that municipality. On September 1st, 1911, a further report was made with special reference to the possible development of a power site at High Falls on the north branch of the Muskoka River.

At this time and for a period extending back to 1906, the town of Gravenhurst had been supplied with electrical power from its own plant located at South Falls on the south branch of the Muskoka River about seven miles north of the town. No change affecting the power situation of the municipalities of Huntsville and Gravenhurst took place until 1915 when the acquisition of the South Falls plant was considered by the Commission.

The Hydraulic Engineer of the Commission on June 28th, 1915, reported that:

> "An accurate distribution among the various classes of service is not possible with the data available from the municipalities' books, but a fairly reasonable pro rata distribution can be made on the basis of the valuation figures hereto attached."

might be added if the system is necessary.

Financial Costs

In September 1969, 1970, the Tasmanian Superior to the town of Queenstown was subject of an investigation into power transmission in the district, having in view the supply of electricity among the municipalities. In September 1971, a further report was made with special reference to the possible development of a power site on High Falls on the Gordon Branch of the Macquarie River.

In this also was for a period extending back to 1968, the town of Queenstown had been supplied with electrical power from its own plant. The High Falls on the Gordon Branch of the Macquarie River about seven miles north of the town. The engineer advising the power allocation of the municipalities of Queenstown and Gormanston took place until 1970 when the acquisition of the Gordon Falls plant was undertaken by the Commission.

The Hydraulic Engineer of the Commission in June 1970, reported that:

> "An adequate distribution among the various places of supply in any possible with the data available from the municipalities' bodies, and a fairly reasonable distribution can be made on the basis of the maximum figures having attained."

The figures referred to are as follows:

Items	Replacement Cost as at June 28th, 1915	Present Value
Generation	$52,158	$39,336
Transmission	10,120	4,048
Transformation	15,000	10,342
Distribution	15,356	8,734
T o t a l s	$90,634	$62,459

The report suggested that the sum of $45,588.61 be paid to the municipality for the generating plant.

On March 10th, 1915, a contract was entered into between the municipal corporation of the town of Huntsville and the Commission for a supply of power, and on October 25th, 1915, a power contract was made with the municipal corporation of the town of Gravenhurst. In October, 1915, the Commission purchased from the town of Gravenhurst the power development at South Falls owned by the municipality and consisting of certain lands, storage dam, power house, generating equipment, etc. The town retained its transmission, transforming and distributing plant and equipment. The consideration to the municipality for the sale of the generating plant was the assumption by the Commission of unmatured debentures to the amount of $50,595.95 issued and sold by the municipality.

The purchase was approved by Order-in-Council which states in part:

The figures referred to are as follows:

Item	Replacement Cost	Present Value
	[illegible]	
Generation	[illegible]	[illegible]
Transmission	[illegible]	[illegible]
Transformation	[illegible]	[illegible]
Distribution	[illegible]	[illegible]
T o t a l	[illegible]	[illegible]

The expert suggested that the sum of [illegible] be paid to the municipality for the generating plant.

On March 20th, 1929, a meeting was held between the municipal representatives of the town of Dartmouth and the Dominion for a supply of power, and on October 25th, 1929, a power contract was made with the municipal representatives of the town of Dartmouth. In October, 1929, the Dominion purchased from the town of Wrangsford the power equipment at Devil Falls owned by the municipality and consisting of storage tanks, storage dam, power house, generating equipment. The town retained its transmission, transformation and distribution plant and equipment. The municipality in the meantime for the sale of the generating plant was the assumption by the Dominion of municipal liabilities to the amount of [illegible] taken out loan by the municipality.

The property was appraised by Graham-Dominion valuators in 1929:

> "The Committee of Council advise that in view of the contracts entered into with the municipalities of Huntsville and Gravenhurst, and the request of other municipalities in the district for a supply of power, the said Commission be authorised to take over the property and development now owned by the municipality of Gravenhurst."

The purchase was made in October; the Commission commenced operating the plant on November 1st, and the Order-in-Council was passed on November 10th, 1915. The authority to the Commission to make the purchase was obtained after it had been completed and the Commission had taken possession. The agreements for the supply of power with the municipal corporations of Huntsville and Gravenhurst were by the Power Commission Amendment Act of 1916 "confirmed and declared to be legal, valid and binding upon the parties thereto respectively and shall not be open to question upon any grounds whatever, notwithstanding the requirements of The Power Commission Act, or the amendments thereto or any other Statute." Each of the agreements extends over a period of sixteen years from the date of the first delivery of power under it. Both agreements provide for annual payments on account of sinking fund,-that with the corporation of Huntsville over a period of sixteen years. The agreement with the corporation of Gravenhurst makes no provision as to the time within which the sinking fund is to be accumulated.

Following the purchase of the South Falls plant, a re-valuation thereof was made by the Engineers of the Commission

in order that the value of the properties on the books of the Commission might conform with the purchase price - $50,595.93. The value of the physical assets was placed at $33,230.00 and of intangible assets at $17,366.00.

On November 1st, 1915, the Commission commenced operating the generating station at South Falls and supplying the municipality of Gravenhurst with about 250 horse-power over the municipality's transmission line, 8.2 miles in length, at the generator voltage of 6,600 volts.

The Commission immediately proceeded to increase the capacity of the South Falls plant. A transmission line constructed from Huntsville to the plant, a distance of about 26 miles, was tested on August 15th, 1916, and ten days later the new equipment at South Falls was put into service and electrical power therefrom supplied to the town of Huntsville at 22,000 volts.

During the period of construction of the extensions to the South Falls plant the power requirements of the town of Gravenhurst were continuously met by operation of the original generating station. On completion of the new unit, the old one was shut down pending overhauling and improvement and was again put into operation in 1917.

In the year 1920 the full capacity of the South Falls generating station was required to meet the power demands of the two municipalities, which had steadily increased. In that

In order that all the preparatory work on the power of the transmitter might proceed with its utmost speed, the mile of the partially complete new flumes at [illegible] and of Tunnelite pipes at [illegible].

On October 1st, 1919, the hydraulic measurement of the quantities of water as there only was available the quantities of irrigation with about 200 inches over the municipality's transmission line, 8.9 miles in length, at the pressure rating of 8,000 volts.

The Commission immediately proceeded to increase the capacity of the Pueblo Viejo plant. A transformer also was operated from the [illegible] plant, a distance of about 22 miles, was tested on August 12th, 1919, and was found that the efficiency of Pueblo Viejo was far less than expected and consequently power generation supplied by the [illegible] of 22,000 volts.

During the period of construction of the mainline to the Pueblo Viejo plant the power requirements of the [illegible] increased very materially and the capacity of the [illegible] generating station. In comparison of the one mile, the [illegible] that were giving clearwater and impoverment and the water for irrigation in 1917.

In the year 1920 the full capacity of the Pueblo Viejo generating station was reached so much the lower Dynamo of the two transformers, which had already [illegible]. In fact

year a further investigation of the undeveloped power possibilities and ultimate capacity of the South Falls plant was made. The demand for power from the town of Huntsville, however, diminished towards the end of 1920, owing to industrial difficulties of the Anglo-Canadian Leather Company, the largest individual consumer of power in the system. In 1921 the average load decreased about 150 electrical horse-power. In 1922 there was an increase in load, the maximum peak being 1,456 electrical horse-power and the horse-power billed, 1,344. The portions of the districts of Muskoka, Parry Sound and Haliburton which might be included in the Muskoka System had in 1921 a combined population of about 21,000. Of this number about 3,600 were residents of Huntsville and Gravenhurst, the only municipalities which have as yet entered into contracts with the Commission. Of this population of 3,600 about 814 were consumers of power on October 31st, 1921.

Expenditures of the Commission in Respect of the System

In addition to the cost of the properties acquired by the Commission from the municipality of Gravenhurst, as above mentioned, by the assumption of debentures amounting to $50,595.93, the Commission expended to October 31st, 1922, on extensions and improvements of the works of the system, the sum of $162,194.89, of which the expenditures to October 31st, 1917, amounted to $139,643.07. The specific appropriations made by the Legislature for this system, to October

31, 1922, amounted to $279,093.92, of which $200,000.00 was voted for the year ending October 31st, 1919. In this as in other instances that we have pointed out, expenditures were apparently made by the Commission out of monies not appropriated therefor, and appropriations made in subsequent years exceeded the total expenditures made for the system, including the debentures assumed.

The expenditures for extensions and improvements were in respect of the following:

Power Development -		
South Falls generating station	$43,488.95	
Hydraulic Construction, etc.	54,235.79	$ 97,724.74
Wood Pole Lines -		
Transmission Line from South Falls generating station to the town of Huntsville	$52,700.07	
Miscellaneous	1,613.37	54,313.44
Distributing Station at Huntsville-		
Building	$ 1,500.53	
Electrical and other Equipment	8,396.32	9,896.85
Miscellaneous during 1922 -		259.86
Total expended for extensions and improvements since October, 1915 -		$162,194.89

The extensions and improvements were undertaken by the Commission under force account with the exception of the power house superstructure, a contract for which was let to Messrs. Witchall & Sons, of Toronto.

The installed capacity of the plant is approximately 1280 electrical horse-power at 80% power factor.

Improvements and extensions were contemplated by the Commission during 1923, and the following appropriation has been voted by the Legislature for the purpose:

"Muskoka System

"To provide for and betterments to stations or lines, the necessity for which may develop - $5,000.00."

Cost per Horse-power

The following table indicates the fractional capital costs per rated horse-power developed for the years 1916 to 1921, inclusive:

	Fiscal years ending October 31st,					
	1916	1917	1918	1919	1920	1921
Power Development	$164.10	$ 99.50	$105.00	$108.80	$115.80	$116.00
Transmission Lines	109.50	42.40	42.40	42.40	42.40	42.40
Transforming and Distributing Stations	18.60	6.96	7.52	7.53	7.65	7.74
T o t a l s	$292.20	$148.86	$154.92	$158.73	$165.85	$166.14

It will be seen from this table that the capital costs per rated plant horse-power developed are high for 1916. This is due to the fact that the repairs and additions to the South Falls plant were made during that year and the expenditures therefor were included while no additional power had yet been made available.

Total Revenues

The following table gives the Commission's revenue from the System for the years 1918 to 1922, inclusive, after

Improvements and enhancements were contemplated by the Commission during 1969, and the following alterations have been voted by the legislature for the purpose

Generator Plant

"To provide for and maintain
in staging at Jimmy, the
necessary two motor and generator - $2,000,000."

Gas and Instrument

The estimates made indicate the transmission capital water for rural turn-power generation for the year 1972 is 1971, some water.

Capital costs during construction

	1968	1969	1970	1971	1972	Yrs
Power generation	$146,12	$ 98,00	$112,00	$98,00	$112,00	$112,00
Transmission lines	197,80	82,00	45,00	42,00	62,00	42,00
Transformating and distribution						
Station	10,00	8,00	7,00	5,00	3,00	7,00
Z a z n z	$[illegible]	$[illegible]	$[illegible]	$[illegible]	$[illegible]	$[illegible]

It will be seen from this table that the capital costs for water light generation developed are high for 1972. This is as it the fact that the tunnel and additions to the Sunset Main plant were made during that year for the equalization reservoir were installed with an additional power has not been made available.

Total Revenue

The following table gives the Commission's revenue from the system for the years 1972 to 1980, inclusive, after

deduction of credits to the municipalities resulting from a reduction in 1920 and made effective from 1917 of the annual renewal rate from 3.5% to 2.5% on the total capital investment. Since the preparation of the part of this table relating to the years prior to 1922, a further reduction has been made in the annual provision for depreciation from 2.5% to 1.25%, which was also made retroactive, resulting in a further credit to the municipalities of $13,383.92 to October 31st, 1921, the effect of which on each year's revenue is shown below. The figures for 1922 are based on the renewal rate of 1.25%.

Table of Annual Revenues

Particulars	Fiscal year ending October 31st 1918	1919	1920	1921	1922
From -					
Municipalities	$21,758.80	$25,035.83	$25,063.44	$27,121.94	$29,637.09
Sundry Customers	56.55	56.05	51.19	51.00	51.00
T o t a l s	$21,815.35	$25,091.88	$25,114.63	$27,172.94	$29,688.09
Less/-					
Reduction in connection with adjustment of renewal reserve rate from 2.50% to 1.25%	2,478.36	2,539.14	2,654.31	2,656.63	none
Adjusted Revenue -	$19,336.99	$22,552.74	$22,460.32	$24,516.31	$29,688.09

Total Cost of Power

The costs of power grouped under various headings for

Industries of months to the municipalities remaining from a
payment in 1939 and made adjustments from 1917 of the annual
channel rate fell 4.3% to 3.0% on the bond capital investment.
Since the jurisdiction at the part of this table relating to the
grade after it 1920, a further reliability has been made in the
annual providing for depreciation from 5.8% to 1.2%, which was
also made retrospective, resulting in a further annuity of the
municipalities of $18,324.40 to twelve mis, 1921, the orders
of which on each year's revenue is shown below. The figures
for 1921 are based on the present rate of 1.25%.

Cost of School Improvements

Territories	1918	1919	1920	1921	1922
	Annual Debt Sinking Charge				
Zone - Municipalities	$21,720.80	$20,103.40	$20,824.64	$17,123.84	$13,267.40
Zone - Industry	$4.00	$4.25	$7.18	$3.69	$3.85
Total	$12,324.32	$10,083.64	$20,316.10	$17,126.84	$20,349.37
Zone 1- Industries in municipalities adjacent to Burnt Par- ners with Zone 2.0% in 1.25%	2,478.24	1,803.34	2,324.21	2,810.18	None
Zone 2- Industries in municipalities remaining from payment in 1939 and made adjustments from 1917 of the annual channel rate from 4.5% to 3.0% on the bond capital investment. Since the jurisdiction at the part of this table relating to the grade after it 1920, a further reliability has been made in the annual providing for depreciation from 5.8% to 1.2%, which was also made retrospective, resulting in a further annuity of the municipalities of $18,324.40 to twelve mis, 1921, the orders of which on each year's revenue is shown below. The figures for 1921 are based on the present rate of 1.25%					
Expenses - Finished	$19,320.19	$20,204.74	$22,640.32	$24,316.21	$23,360.49

the years 1918 to 1922, inclusive, after deduction from "Provision for Renewals" of the amounts attributable to each of the years of the reduction of renewal reserve effected by the change of the annual renewal rate from 3.5% to 2.5% on capital cost, appear in the next table. The provision for renewals and consequent total expenses for the several years prior to 1922 are subject to further reduction, in giving effect to the reduction of the annual renewal rate from 2.5% to 1.25%, the effect of which is shown in the table.

Table of Total Annual Costs of Power

Particulars	Fiscal year ending October 31st 1918	1919	1920	1921	1922
Operating Expenses -	$ 4,312.35	$ 5,104.71	$ 5,373.85	$ 5,521.73	-$12,464.62
Maintenance Expenses -	2,160.00	3,061.28	1,696.02	2,752.05	
Overhead Expenses -	2,159.89	2,711.79	2,705.47	2,832.36	
Interest	7,930.95	8,802.57	9,661.89	9,670.16	9,447.88
Provision for Renewals -	4,956.73	5,076.29	5,308.63	5,313.27	2,659.87
Provision for Sinking Fund	-	-	-	750.60	3,743.41
Provision for Contingencies	247.23	296.47	337.50	301.80	1,342.60
Total -	$21,777.15	$25,055.11	$25,083.36	$27,141.97	$29,658.38
Less - Reduction in Renewal Provision -	2,478.36	2,539.14	2,654.31	2,656.63	none
Adjusted Costs -	$19,298.79	$22,515.97	$22,429.05	$24,485.34	$29,658.38

The years 1970 to 1972, inclusive, after adjusting for "Investment (or Savings)" of the amounts attributable to each of the years of the existence of removal centers effected by the change of the annual average rate from 3.8% to 5.8% as noted, higher in the next table. The percentage due expenses and conversion total expenses for the natural years period is 1963 are subject to further reduction, in giving effect to the reduction of the annual average rate from 5.8% to 1.75%, the effect of which is shown in the table.

Table 4: Total Annual Costs at Power

Particulars	Actual and audited figures in Lakhs 1970	1971	1972	1973
Operating Expenses - Maintenance - Expenses - Depreciation	3,344.49	4,945.47	4,490.60	5,720.47
Expenses - Interest	2,128.05	2,717.42	2,752.47	2,824.80
Interest	7,220.88	8,200.87	8,863.84	9,048.12
Provision for Gratuity -	4,908.73	5,678.64	5,599.61	5,320.17
Provision for Staking Tax	-	-	-	750.00
Provision for Contingency	182.02	184.97	327.60	221.00
Total -	22,777.12	22,680.11	26,019.14	27,181.37
Less - Credits in Annual Accounts - Interest -	2,477.34	2,519.17	2,492.61	2,404.42
Costs -	20,299.78	20,161.94	23,527.03	24,776.95

Balances of revenues over total costs in each of the above years, representing profit on power sold to sundry customers, were transferred to Contingency Reserve Account.

Costs per Horse-power

The following table showing the detailed costs per horse-power billed illustrates in what respects and to what extent the operating expenses and fixed charges have varied:

Particulars	Fiscal year ending October 31st 1918	1919	1920	1921	1922
Operation	$4.40	$ 4.30	$ 3.98	$ 4.58	
Maintenance	2.28	2.58	1.26	2.28	$ 9.28
Overhead & General Expenses	2.21	2.29	2.00	2.35	
Interest	8.09	7.42	7.16	8.02	7.03
Renewals	2.53	2.15	1.96	2.19	1.98
Sinking Fund	-	-	-	.62	2.78
Contingencies	.25	.25	.25	.25	1.00
	$19.68	$18.99	$16.61	$20.29	$22.07

The items in the above table for "Renewals" and the totals of cost reflect the retroactive renewal rate of 1.25% on capital established by the Commission in December, 1922.

Reserve for Renewals

The balance in the reserve for renewals in respect of properties of the Muskoka System on October 31st, 1921, after adjustment to that date of the renewal reserve account following the reduction of the annual rate from 3½% to 2½%, amounted to $25,471.39.

The further reduction made in December, 1922, of the annual renewal rate to 1¼% resulted in a reduction of this balance of $25,471.39 by $13,398.99, or to $12,072.40. Of the reduction of $13,398.99 in the reserve for renewals, $13,383.92 was applied as credits to the municipalities and $15.07 as an addition to the reserve for contingencies.

On October 31st, 1922, the reserve for renewals amounted to $15,215.17, having increased to that amount by the addition of the provision therefor in power costs for the fiscal year ending on that date and of interest accretions for that year.

Prior to the revision of the annual renewal rate in December, 1922, our Consulting Engineer reported that the amount shown to the credit of the reserve for renewals on October 31st, 1921, was somewhat larger than was necessary. He has not yet reported upon the amount of the reduction actually made. The general subject of reserve for renewals we propose dealing with in our General Report.

Reserve for Sinking Fund

Under the agreement between the Commission and the municipal corporation of the town of Gravenhurst, dated October 25th, 1915, the corporation agreed to pay annually to the Commission its "proportionate part of interest and sinking fund (based on the quantity of electrical energy or power taken) on all monies expended by the Commission on capital

The factory production which in December, 1900, on the annual rebate was to be treated in a tentative or this release of $10,671,172 by $28,395,97, or to $10,272,40. Of its depletion of $13,382.82 in the reserve for insurance, $13,300.00 was applied as credits to the municipalities and $18.97 as an addition to the reserve for uncollectibles.

On October 31st, 1900, the reserve for renewals amounted to $18,818.17, having increased in this manner at the addition of the generation expenditure in power works for the first year making no that data and of interest accretions for that year.

Prior to the revision of the annual Treasurer's rate in December, 1902, our Consulting Engineer reported that the annual charge to the profit at the Reserve for renewals on October 31st, 1902, was somewhat larger than was necessary. On the 31st you adjusted upon the amount of the reserve actually made. The general employed of transfer for renewals we propose dealing with in our Report Report.

<u>Reserve for Sinking Fund</u>

Under the agreement between the Commission and the municipal municipalities of the town of Stratfordmers, dated October 2nd, 1902, the corporation agreed to pay annually to the commission the "principal" part of interest and sinking fund (based on the quantity of electrical energy or power taken) which begins accruing on the Commission on actual <u>which begins accruing on the Commission</u> on actual

account for the acquiring of properties and rights and acquiring and construction of generating plants, transformer stations, transmission lines, distributing stations and other works necessary for the delivery of said electrical power or energy to the corporation under the terms of this agreement." Provision was further made that the agreement should "remain in force for sixteen years from the date of the first delivery of power under this contract." This date was November 1st, 1915.

Until 1918 the Power Commission Act required a municipal corporation to pay to the Commission as part of the cost of power "an annual sum sufficient to form in thirty years a sinking fund for retirement of the securities by Ontario under this Act for the payment of the cost of the works." In 1918 this Act was amended by adding the words, "with interest at four per cent. per annum" after the words "sinking fund", and substituting the words "the repayment of the advances made" for the words, "retirement of securities." The South Falls generating works as acquired by the Commission were the only works "necessary for the delivery of said electrical power or energy to the corporation," and the only monies so far expended on capital account for acquiring these works are the monies paid by the Commission for principal, interest and sinking fund towards retiring the debentures of the corporation which were assumed by the Commission as the consideration for the sale of the South Falls generating plant by the corporation. Annual payments totalling $3,849.10 are

assent for the supplying of transformers and rights and
supplying and maintaining of generating plants, transmission
stations, transmission lines, distributing stations and other
works necessary for the delivery of said electrical power or
energy in the aforesaid under the terms of this agreement."
Providing the further proviso that the agreement should "remain
in force for eighty years from the date of the first delivery
of power under this contract." This date was therefore 1918.

Until 1919 the Power Commission had received a
municipal corporation as key in the Commission as part of the
east or power "so [illegible] that authorities in Ontario in making
state a minimum fund for efficiency of the municipalities if
Ontario under this act for the payment of the cost of the
works." In 1919 this Act was repealed by adding the words,
"with interest at four per cent. per annum" after the words
"sinking fund", and substituting the words "the treasurer of
the Ontario mode" for the words, "municipality of municipalities."
The Ontario Hydro generating works as acquired by the Commission
also were the only works "necessary for the delivery of said
electrical power or energy to the corporation." And the only
notice to the consumer on capital account for supplying these
works are the notice paid by the Commission for principal,
interest and sinking fund thereby relieving the taxpayers of the
municipalities which were assessed by the Commission or the Ontario
municipalities for the sale of the Hydro Electric Power Plant
by the corporation. Annual income statements 1918-1920 are

required to be made by the Commission to retire at maturity the debentures assumed. The Commission has treated the original amount of the debentures assumed - $50,595.93 - as "advances made by Ontario." It annually apportions $50,311.92 of the $50,595.93 between the municipal corporations of Gravenhurst and Huntsville, and $284.01 to sundry customers, as the amounts in respect of which annual payments commencing in the sixth year of operation shall be respectively made by the municipal corporations on account of sinking fund, and has fixed the annual payments on the basis of forming in thirty years, with interest at the rate of four per cent. per annum, a sinking fund for payment to the Commission of the $50,595.93. Interest on this amount is also included in the annual costs of power payable by the corporations and others. In effect the Commission has proceeded as if the $50,595.93 was advanced in 1915 by the Province under the Power Commission Act, as it clearly was not, the only possible advances by the Province for the cost of the works being the annual payments made on account of the debentures assumed.

Of the original amount - $50,595.93 - of the debentures assumed, $38,532.26 will be retired by the annual payments made by the Commission, in 1936, $7,693.15 in 1939 and $4,370.52 in 1943. Sinking fund payments made by the municipal corporations and others will not amount, on the basis adopted, to $50,595.93 until 1952. The present contract with the municipal corporation of Gravenhurst will expire,

requires to be made by the Commission to write at maturity the debentures assumed. The Commission has stated the original amount of the debentures assumed - $[illegible] - as "[illegible] made by [illegible]." It actually appropriate $[illegible] of the $[illegible] between the municipal structures of Harrowsmith and Murvaville, and $[illegible] to nearly contract, is the amount to Portsmith if which should payments accruing in the ninth year of operation shall be respectively made by the municipal corporations on account of sinking fund, and the final six annual payments on the basis of [illegible] in thirty years, with interest on the debt at five per cent. The annual payment in the Township of the [illegible] $[illegible]. Interest on this amount is also included in the annual rate of power payable by the municipalities and others. In effect the Commission has promised us if the $[illegible] may attained in 1912 by the Province make the Power Commission act, or it clearly was not, the only possible arrears by the Province for the work of the years being the annual payments made on account of the debentures assumed.

At the original rates - $[illegible] - of the debentures assumed, $[illegible] will be required to the annual payments made by the municipalities in 1908, $[illegible] in 1912 and $[illegible] in 1917. Starting from payments made by the municipal corporations and others will not amount, as the rate changes, to $[illegible] until 1922. The present contract with the municipal corporations of Harrowsmith will expire.

unless renewed for a further term, on November 1st, 1931, and that with the municipal corporation of Huntsville on August 25th, 1932.

The expenditure by the Commission from monies advanced by the Province on the extension and improvement of the South Falls plant and on transmission lines, etc., to supply the municipality of Huntsville with power, amounted to $152,194.89. To provide a sinking fund sufficient in thirty years with interest at four per cent. per annum for repayment of this amount an annual payment on the basis of 1.8 per cent. and commencing October 31st, 1922, is being charged the corporation in addition to the annual payment on sinking fund account in respect of the corporation's proportion of the original cost of the South Falls plant.

The amount charged on sinking fund account as part of the cost of power to the corporation of Gravenhurst amounted to $1,419.04 for two years ending October 31st, 1922. The corporation of Huntsville was charged for the first time on sinking fund account in 1922, the amount of the charge being $3,069.84. The sum of $5.13 was apportioned to "sundry customers" to October 31st, 1922. On October 31st, 1922, the amount of the reserve for sinking fund of the system, including interest credited at the rate of four per cent. per annum, was $4,524.03.

Under the agreement of March 10th, 1915, the municipal corporation of the town of Huntsville agreed "to pay an annual sinking fund instalment of such amount as to form at the end of

sixteen years, with accrued interest, a sinking fund sufficient to repay the corporation's proportionate part of all moneys advanced by the Province."

Reserve for Contingencies

The balance in the reserve for contingencies at October 31st, 1921, amounted to $1,911.14, and on October 31st, 1922, to $3,575.57.

The reserve for contingencies was established by the Commission for the purpose of providing for special losses or expenses not arising at regular intervals and not wholly applicable to the period in which incurred. The contingency reserve for this system was, until October 31st, 1921, provided through a charge of 25 cents per horse-power included in the costs of power supplied each year to the municipalities and others, together with the interest at 4 per cent. per annum on the balance in the reserve account at the beginning of the year. In 1922 the charge was increased to $1.00 per horse-power.

In respect of the adequacy of the contingencies reserve as at October 31st, 1921, our Consulting Engineer states as follows:

> "Considering the heavy losses which might be occasioned through catastrophe or other contingencies, it is considered that the total amount at the credit of this fund, namely $1,911, should be augmented by increasing the annual allowance for contingencies and when a reserve of say $5,000 or $10,000 will have been built up, the rates can be readjusted to suit the conditions found after several further years of experience."

Accounts with Municipal Corporations

These are of two classes:-

(a) Power Accounts Receivable, being unpaid balances in respect of interim power bills rendered monthly to the corporations.

(b) Due by or to municipal corporations on annual adjustment by the Commission of power costs for the year.

(a) Interim accounts appear to have been paid currently by the municipal corporations in the system.

(b) On October 31st, 1922, there was a debit balance against the municipal corporation of Gravenhurst of $3,764.15, and a credit balance to the municipal corporation of Huntsville of $11,534.56. The transfer of $13,383.92 from Renewal Reserve to the credit of the municipal corporations is reflected in these balances.

RESULTS OF OPERATION

(A) - ESTIMATED POWER LOADS COMPARED WITH ACTUAL POWER LOADS TO OCTOBER 31ST, 1922.

Municipality of Gravenhurst

For each of the years 1918 to 1922 (inclusive) the actual power load exceeded the estimated load. The estimated load was 300 horse-power. The actual load was:

For the year ending October 31st, 1918 - 312.6
For the year ending October 31st, 1919 - 359.3
For the year ending October 31st, 1920 - 478.4
For the year ending October 31st, 1921 - 368.2
For the year ending October 31st, 1922 - 361.9

Average load - 376.1.

Municipality of Huntsville

The Commission submitted to this municipality estimates of cost per horse-power based on estimated supply of 700 or 800 horse-power. The actual loads exceeded the higher estimated load in each year from 1919 to 1922, inclusive. In 1918 the actual load was less than the lower estimated load. The actual load for each of the years 1918 to 1922, inclusive, was:

For the year ending October 31st, 1918 - 667.3
For the year ending October 31st, 1919 - 826.6
For the year ending October 31st, 1920 - 871.6
For the year ending October 31st, 1921 - 839.0
For the year ending October 31st, 1922 - 980.7

Average load - 837.04

(3) - ESTIMATED COST PER HORSE-POWER COMPARED WITH ACTUAL COST PER HORSE-POWER.

Municipality of Gravenhurst

Under date of July 27th, 1915, the Commission submitted an estimate of cost to the municipality of Gravenhurst of $15.51 per horse-power for a supply of 300 horse-power per annum. The actual load for each of the years 1918 to 1922, inclusive, exceeded 300 horse-power as is shown above.

Without effect being given to the reduction in renewal reserve in December, 1922, and consequent credit to the municipality for the years 1918 to 1921, inclusive, the actual cost per horse-power for each year as compared with the estimated cost of $15.51 was:

Availability of Generators.

The foreclosing submitted to this municipality estimates of unit for horse-power based on estimated supply of 750 hp for horse-power. The actual loads exceeded the highest estimated load in each year from 1918 to 1928, inclusive. In 1929 the actual load was less than the lower estimated load. The actual load for each of the years 1929 to 2000, inclusive, was:

For the year ending December 31st, 1929 - 1072.3
For the year ending December 31st, 1930 - 1000.0
For the year ending December 31st, 1931 - 1174.8
For the year ending December 31st, 1932 - 1092.0
For the year ending December 31st, 2000 - 2980.7

Average load - 1807.04

(3)- Estimate of the horse-power demands with special regard to the municipality.

Availability of Generators

Under date of July 11th, 1924, the foreclosing authorized an estimate of year to the municipality of Tarnsmouth at 750.22 hp horse-power for a supply of 300 horse-power per annum. The actual load for each of the years 1918 to 1927, inclusive, exceeded 750 horse-power as is shown above.

Difficulty arises being given to the requisition to present vacancy in generator. 1924, and subsequent events in the municipality for the years 1918 to 1927, inclusive, the actual year for horse-power for each year as compared with the estimated load of 750.22 was:

For the year ending October 31st, 1918 - $17.16 per h.p.
For the year ending October 31st, 1919 - $17.09 "
For the year ending October 31st, 1920 - $14.43 "
For the year ending October 31st, 1921 - $19.10 "
For the year ending October 31st, 1922 - $17.61 "

The apportionment of the amount transferred from renewal reserve to the credit of the municipality will materially reduce above costs for the years 1918 to 1921, inclusive. As an indication of the amount of the reduction, the 1921 cost of $19.10 would be $17.69 after applying the credit.

Municipality of Huntsville

The estimates of cost submitted to this municipality were as follows:

	On basis of Contract for 15 yrs.	20 yrs.
For 700 horse-power	$29.63	$26.62
For 800 horse-power	25.92	25.02.

The contract made covered a period of sixteen years and for the years 1919 to 1922, inclusive, the actual loads, as mentioned above, exceeded 800 horse-power, and the actual cost per horse-power for each of these years, as well as for the year 1918 when the load was less than 700 horse-power, was less than the lowest estimated cost furnished by the Commission under a contract for twenty years. Before giving effect for the years 1918 to 1921, inclusive, to the retroactive revision of annual renewal rate made by the Commission in December, 1922, before referred to, and consequent credit to the municipality,

For the year ending January 31st, 1912	$17,12 per h.p.
For the year ending October 31st, 1912	$17.32 "
For the year ending October 31st, 1913	$16.67 "
For the year ending October 31st, 1914	$15.18 "
For the year ending October 31st, 1920	$17.21 "

The expenditures of the account transferred from general revenue to the credit of the municipality will certainly reduce rates for the years 1919 to 1921, inclusive. In an instance if the amount of the revenue for 1921 rate of $17.32 would be $17.42 after applying the credit.

Municipality of Yarmouth

The desirable of some authority to give municipality case in point.

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		In basis of Contract for 12 yrs.	In basis of Contract for 20 yrs.
For 700 horse-power		$28.22	$28.22
For 300 horse-power		32.22	32.22

The district made reserve a policy to direct power and for the years 1919 to 1921, inclusive. The without light, as mentioned above, expended 300 horse-power, and the extent over 300 horse-power for each of three years, as well as for the year 1919 when the load was less than 700 horse-power, was less than the larger rates charged as exclusive to the Commission under a contract for hydro power. Before giving notice for the year 1921 to 1921, inclusive, to the corporation municipal revenue with made by the Commission in November, 1918, before entering in, and management assist to the municipality.

the actual cost per horse-power was:

For the year ending October 31st, 1918 - $24.32 per h.p.
For the year ending October 31st, 1919 - $22.85 "
For the year ending October 31st, 1920 - $20.84 "
For the year ending October 31st, 1921 - $23.94 "
For the year ending October 31st, 1922 - $23.72 "

Apportionment of the amount credited to the municipality, deducted from renewal reserve following the reduction in December, 1922, of the annual renewal rate, will materially reduce the actual cost as shown above for the years 1918 to 1921, inclusive, and reduce same further below the estimated cost.

In considering the foregoing comparison of estimated costs with actual costs, it is to be borne in mind that in the case of each municipality payments on account of sinking fund for the first five years in which power was supplied were deferred and that the first payment made by the municipality of Gravenhurst was in 1921 and that by the municipality of Huntsville in 1922.

Supply of Power for Future Requirements

The present South Falls works of the system will doubtless in a short time be inadequate to produce sufficient power to meet an increased demand in the system. The municipally owned plant of the town of Bracebridge is of insufficient capacity to supply that municipality with its present requirements and a contract for the necessary additional power may be made with the Commission. It is stated that about

the return was the above-mentioned.

For the year ending December 31st, 1919	$124,22 per h.p.
For the year ending December 31st, 1920	" $127.02
For the year ending December 31st, 1921	" $122.04
For the year ending October 31st, 1922	" $124.72
For the year ending December 31st, 1923	" $124.72

Apportionment of the energy produced in the municipality, furnished from general reserve following the expansion in December, 1923, of the annual renewal rate, will materially reduce the rights that we have above for the years 1919 to 1923, inclusive, and reduce some further below the estimated cost.

In considering the foregoing comparison of estimated costs with actual costs, it is to be borne in mind that in the case of most municipalities preference on account of electric from the first five years in which power was delivered were deferred and that the first payment made by the municipality of Brantford was in 1921 and that by the municipality of Kantsville in 1922.

Limits of Power for Future Development

The present Niagara Falls power of the system will develop in a short time be insufficient to provide sufficient power to meet an increased demand in the system. The municipality/Power plant of the town of Dunnville is at inadequate capacity to supply that municipality with the present demand and a contract for the necessary additional

4,000 additional horse-power can be made available from the South Falls power site without the necessity of any additional structures or the further purchase of properties. At High Falls on the north branch of the Muskoka River, about eight miles north of the South Falls plant and about 21 miles from the town of Huntsville there is an undeveloped hydro-electric power site stated to have a capacity of about 1500 water horse-power obtainable at the head of 44 feet. A dam at this point would improve the low water conditions of the hydro-electric plants owned by the municipality of Bracebridge, and located further down the stream. The proximity of this site to the existing high voltage transmission line from the South Falls generating station to Huntsville would permit of the parallel operation of the South Falls plant and a plant at High Falls with the construction of only about one mile of additional transmission line. The development might prove economically feasible. There are other power sites in the district of Muskoka that might be utilised for the production of additional power for the system.

Complaints against the rates charged for Power to the System

No special public hearing was held in respect of the system, but correspondence on the files of the Commission indicates that there was dissatisfaction expressed by some of the electors of Gravenhurst at the rates charged for power to that municipality.

6,000 additional horse-power can be made available from the Sault Ste Marie plant with minimum expenditure of any additional structures or the further purchase of properties. It also falls in the city's grasp at the Dawson Creek, where which mean work of the Sault Ste Marie plant and that it makes the turn of Saskatchewan Hydro-electric power with ease to have a capacity of extra 12,000 horse-power available on the head of 44 feet. A due of this plant would improve the low water conditions of the Qu'Appelle electric plants owned by the municipality of Saskatchewan and Indian Head down the stream. The problems of this kind to the varying rate of the Saskatchewan River. Transmission line from the Sault Ste Marie generating station to Huntsville would permit of the parallel operation of the Ayers Falls plant with a plant on high falls with the construction of only seven miles of additional transmission line. The distribution under power economically feasible. There are other power sites in the district of Dawson that might be utilized for the generation of additional power for the operation.

Daughters visited the Dawson Mayor
for Power in the Yukon

No special public meeting was held in regard of the system, but representations on the field of the Dominion indicated that there was dissatisfaction expressed in some of the districts of Prospecting of the water charged for power in that municipality.

Mr. Butterworth, a member of the Gravenhurst Commission, gave evidence before us at a general hearing on April 25th, 1923, and made the following statements:

> "The original proposal was power at $10.00 per horse-power, and we were told that if Hydro took it over we should probably get it at $8.00, certainly less than $10.00, but we are now paying $20.00."
>
> "We find quite a difficulty in getting men who are willing to sit on the Commission; they take the view that the Hydro control it to such an extent that they might as well stay at home and let Hydro control the whole thing. We have no power to fix the rate that shall be charged and we have no voice in determining what expenditure shall be incurred and we have simply to take our instructions from the Hydro Commission."
>
> "Then we have Bracebridge; they can generate power and sell it to their manufacturers at $12.66 a horse-power. I was talking to their Mayor a few weeks ago. They are not on the Hydro and, they tell you, you could not chase them on the Hydro, although they would like to have more power. They are operating their plant at $12.66 a horse-power. The Mayor was for a long time on the Commission and he claims they are absolutely sound."

Our Accountants have reported that the estimated cost of power submitted by the Commission to the town of Gravenhurst, based on a load of 300 horse-power, was $15.51 per horse-power. The actual cost of power to the municipality, as given on pages 18 and 19 hereof, shows that the consumers of power have no cause of complaint as to the rates charged, and should have relied on the estimate submitted rather than on optimistic statements regarding probable results.

Conclusion

We desire to direct special attention to the present position in regard to the sinking fund of the system, payments on account of which do not appear to be in accordance with either The Power Commission Act or the contracts with the municipal corporations. Serious complications may arise at the termination of the sixteen-year contracts with the two municipal corporations in adjusting the respective rights of the Province, the Commission and the municipalities if present conditions as to sinking fund reserve remain unchanged.

All of which is respectfully submitted.

DATED AT TORONTO, Sept 21st 1923

W. D. Gregory, Chairman
M. J. Haney
Lloyd Harris
J. Allan Ross
R. A. Ross

Conclusion

We desire to invite special attention to the powers possible to support to the existing Act or any system, however we consider it wise to set aside to by in conjunction with other the more comprehensive act or the enlargement with the material improvements. Better administration may arise as the curtailing of the always-year contracts with the new material improvements in utilizing the frequently rights of the Province, the Dominion and the municipalities is present inability to to utilize that taxpayers funds expended.

All of which is respectfully submitted.

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DATED AT TORONTO, ... 1955

W. D. Gregory, Chairman
M. J. Haney
Lloyd Harris
J. Allan Ross
R. A. Ross